भारतीय मानक
Indian Standard

IS 17889 : 2022

सुरक्षा सामग्री डेटा शीट्स — मार्गदर्शिका

Material Safety Data Sheets — Guidelines

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Chemical Hazards Sectional Committee, CHD 7

FOREWORD

‘This Indian Standard was adopted by the Bureau of Indian Standards on recommendation of the Chemical Hazards Sectional Committee and approval of the Chemical Division Council’.

Material Safety Data Sheet (MSDS) or simply SDS (Safety Data Sheet) is the means of communicating information about the hazardous properties of a material to the users, plant workers, people handling material in transit, the government agencies involved and general public. This is an essential component of hazard communication.

The Globally Harmonized System of Classification and Labelling of Chemicals (GHS) is an internationally agreed-upon system, created by the United Nations (UN). The GHS includes criteria for the classification of health, physical and environmental hazards, as well as specifying what information should be included on labels of hazardous chemicals as well as safety data sheets.

The International Organization for Standards (ISO) has published ISO 11014 — Safety data sheet for chemical products – Content and order of sections. This international standard has been developed by aligning the text with the GHS as regards hazard communication.

In India — *The Factories Act* as per section 41B inserted in 1987 stipulates — Compulsory disclosure of information by occupier. Under the provision of this section, the respective state governments have stipulated format of MSDS in the respective factories rules. For example, rule 73-M in *Maharashtra Factories Rules* provides a 10-section format for Material Safety Data Sheet. The *Tamil Nadu Factories Rules* 1950 has stipulated an 11- section format of the MSDS under an exclusive schedule. The *Atomic Energy (Factories) Rules* of Atomic Energy Regulatory Board (AERB) had given an 8- section format of MSDS. The *Manufacture, Storage and Import of Hazardous Chemicals (MSIHC) Rules*, 1989 amended in 2000, under the Environment Act of Ministry of Environment and Forests (MoEF) stipulates a 10 - section format of Safety Data Sheet (SDS) for collection, development and dissemination of information.

This standard has been formulated to harmonize with the internationally available format such as the one provided by ISO and GHS for better hazard communication globally.

While formulating this standard, considerable assistance has been derived from the following references:

1. The *Manufacture, Storage and Import of Hazardous Chemical Rules* 1989 as amended in 2000.
2. The *Atomic Energy (Factories) Rules*, 1996.
3. The *Maharashtra Factories Rules*, 1963.
4. The *Tamil Nadu Factories Rules* 1950 (year of amendment to be added).
5. Globally Harmonised System of Classification and Labelling of Chemicals (GHS), 2011
6. ISO 11014 : 2014 — Safety data sheet for chemical products – Content and order of sections.
7. Draft notification: *Dangerous Goods (classification, packaging and labelling) Rules*, 2013, Ministry of Environment and Forests Indian Standard.

The composition of the committee responsible for the formulation of this standard is given at Annex C.

Indian Standard

MATERIAL SAFETY DATA SHEETS — GUIDELINES

(First Revision)

1 SCOPE

This standard prescribes requirements for the format for Material Safety Data Sheet (MSDS). The possible contents that should be given under each of the 16 sections of the format are outlined. Guidelines for compilation and completion of an MSDS also have been provided.

> NOTE — This standard, while acting as a guideline for preparation of an MSDS, does not guarantee the veracity of the contents given in the respective MSDS. The author(s) of the specific MSDS, for example the manufacturer or supplier, shall ensure this aspect while preparing the MSDS.

2 TERMS AND DEFINITIONS

For the purpose of this Standard, the following terms and definitions apply.

2.1 Chemical Product

A chemical or a mixture of chemicals.

2.2 Exposure Control

Range of precautionary measures required to protect a user of a chemical product.

2.3 Harm

Physical injury or damage to health of people, or damage to property or the environment.

2.4 Hazard

Potential source of harm.

2.5 Hazard Statement

Statement assigned to a hazard class and category that describes the nature of the hazard of a hazardous product, including, where appropriate, the degree of hazard.

2.6 Intended Use

Use of a chemical product, process of service in accordance with information provided by a supplier.

2.7 Label element

Type of information that has been harmonized for use in a label. Examples: Pictogram, signal word.

2.8 Mixture

A combination of two or more substances in which they do not react.

2.9 Pictogram

Graphical composition that may include a symbol plus other graphic elements, such as a border, background pattern or colour that is intended to convey specific information.

2.10 Precautionary Statement.

Phrase (and/or pictogram) that describes recommended measures that should be taken to minimize or prevent adverse effects resulting from exposure to a hazardous chemical product.

2.11 Reasonably Foreseeable Misuse

Use of a chemical product, process or service, in a way not intended by a supplier, but which may result from readily predictable human behaviour.

2.12 Recipient

Party receiving a chemical product, for industrial or professional use, such as storage, handling, processing or packaging, from a supplier.

2.13 Risk

Combination of the probability of occurrence of harm and the severity of that harm.

2.14 Safety

Freedom from unacceptable risk.

2.15 Signal Word

Word used to indicate the relative level of severity of hazard and alert the reader to a potential hazard.

2.16 Supplier

Party responsible for making a chemical product available to a recipient.

2.17 Symbol

Graphical element intended to succinctly convey information.

3 GENERAL

3.1 An MSDS applies to a chemical product as a whole. Information contained in an MSDS is non confidential information on composition and ingredients. Any supplier should provide a complete MSDS to the recipient and shall contain relevant information on safety, health and environment. The supplier shall keep the MSDS up to date and provide the recipient with the latest edition.

3.2 Since an MSDS is merely a chemical product related, it cannot take into account all the possible situations which may arise at any given workplace. The user of an MSDS is responsible for taking precaution in accordance with a risk assessment regarding conditions of chemical product use and keeping users appropriately informed about hazards relevant to their individual work place. When formulating specific instructions for the work place, the recipient should consider the general recommendations of relevant MSDS. Therefore an MSDS only constitutes a part of the information necessary to establish a safety programme.

3.3 Comprehensive information about a substance or mixture should be provided by an MSDS for use in workplace. When a chemical product is a mixture, it is not necessary to produce individual MSDS corresponding to each relevant ingredient. Instead, a single MSDS for a mixture may be produced and provided. Where information on each ingredient constituting the chemical product is useful, it should be provided.

4 CONTENTS AND GENERAL LAYOUT OF AN MSDS

4.1 An MSDS shall provide the relevant information about a chemical product, in following 16 section headings. Text of the section headings, numbering and sequence shall not be altered. The section headings are given in Table 1.

Table 1 Section Headings

(*Clause* 4)

Sl No. (1)	Section (2)	Headings (3)
i)	1	Chemical product and company identification
ii)	2	Hazards identification
iii)	3	Composition/information on ingredients
iv)	4	First-aid measures
v)	5	Fire-fighting measures
vi)	6	Accidental release measures
vii)	7	Handling and storage
viii)	8	Exposure controls and personal protection
ix)	9	Physical and chemical properties
x)	10	Stability and reactivity
xi)	11	Toxicological information
xii)	12	Ecological information
xiii)	13	Disposal considerations
xiv)	14	Transport information
xv)	15	Regulatory information
xvi)	16	Other information

4.2 Under each of the 16 section headings, relevant information shall be stated. If this information is not available, then the reason for non-availability shall be stated. With the exception of section 16, other information, blanks shall not be left. In an MSDS, the source of information need not necessarily be provided. However, to increase confidence in the information the source may be provided.

4.3 The 16 sections shall be completed in accordance with Annex A.

These 16 sections may be sub-divided by means of sub-headings. The 16 sections shall be separated clearly. The headings and sub-headings shall be presented in a conspicuous way. When sub-headings or items are given, they shall be given in the sequence specified in Annex B.

4.4 Every page of an MSDS shall include the name of the chemical product as used on the label, and shall be dated and numbered. The date indicated shall be the latest revision date. The page numbering system should include the total number of pages.

ANNEX A

(*Clause* 4.3)

GUIDELINES FOR COMPILATION AND COMPLETION OF AN MSDS

A-1 GENERAL

A-1.1 This annexure gives guidelines for the compilation and completion of MSDS. Its purpose is to ensure that the content of each section enables the recipients to take necessary measures for safety, health and environment. The 16 sections of an MSDS shall be completed in accordance with the recommendations and requirements of this annexure.

A-1.2 The annexure provides the main items which are used to complete the 16 sections. While this annexure provides examples of the items which can be entered in an MSDS, other items may also be used.

A-1.3 These main items may be used as subheadings in an MSDS. The recommended subheadings appear in italics under the headings to Clauses **A-2** to **A-17** for each section.

A-1.4 Information not specifically relevant to one of the items/subheadings mentioned in this annexure, but relevant to the MSDS, may be stated under an additional subheading.

A-1.5 For a given chemical product, not all of the items/subheadings listed have to be used and completed since some of them are optional.

A-2 SECTION 1 - CHEMICAL PRODUCT AND COMPANY IDENTIFICATION

A-2.1 This section shall state the identification of the product as used on the label. It is also recommended to state the supplier product code, where it accompanies the product.

A-2.2 The name, address and telephone number of the supplier shall be stated. The emergency telephone number should be given. Fax number and email address may also be given.

A-2.3 Recommended uses and restrictions on use of the chemical products should be stated.

A-3 SECTION 2 - HAZARDS IDENTIFICATION

A-3.1 It is recommended to summarize clearly and concisely the important hazards and adverse effects of the chemical product on human health and the environment, and physical and chemical hazards, including specific hazards, where appropriate.

A-3.2 If a chemical product is classified in accordance with the GHS classification, this section shall provide its hazard class and category in the GHS as well as the GHS label elements that are pictograms or symbols, signal word(s), hazard statement(s) and precautionary statement(s). Pictograms or hazard symbols may be provided as graphical production of symbols in black and white or as the name of symbol, examples, flame, skull and cross bones. It is also recommended to state other hazards which do not result in GHS classification, example, dust explosion hazard. Any adoption of the GHS classification should be stated clearly in this section (example, by describing an applicable regulation).

A-3.3 Important symptoms and an outline of an anticipated emergency may also be stated.

A-4 SECTION 3 - COMPOSITION/ INFORMATION ON INGREDIENTS

A-4.1 This section shall state whether the chemical product is a substance or a mixture.

A-4.2 In the case of a substance, the systematic chemical name (example, International Union of Pure and Applied Chemistry - IUPAC name, CAS name) and the trivial common or generic name(s) shall be given.

A-4.3 The Chemical Abstract Service Registry Number (CAS number) and other identifiers, wherever available, should be given.

A-4.4 The systematic chemical name (example, IUPAC name, CAS name) and trivial, common or generic name and concentration range or concentration ranges of all hazardous ingredients including impurities and stabilizing additives which contribute to classification of the substance should also be indicated.

A-4.5 In the case of mixtures, it is not necessary to give the full composition.

A-4.6 If the ingredients which are hazardous, are present above their cut-off levels, the chemical identity and concentration or concentration ranges of all the relevant ingredients shall be given. When hazardous ingredients are identified, their systematic chemical names (example, IUPAC names, CAS names) or trivial, common or generic names and their concentration or concentration ranges should be provided.

A-5 SECTION 4 - FIRST-AID MEASURES

A-5.1 This section shall state the first-aid measures to be taken, if necessary. It shall state which actions have to be avoided at all costs. The information should be readily understandable by the person adversely affected and/or the first-aider.

A-5.2 The information shall be subdivided according to the different exposure routes, i.e. inhalation, skin contact, eye contact and ingestion.

A-5.3 If specific agent is recommended as an antidote, it should be given here.

A-5.4 A brief description of the anticipated acute effects, anticipated delayed effects and most important symptoms/effects should be given here. However, a detailed description of symptoms and effects should be given under section 11 (*see* clause **A-12**). If appropriate, advice for the protection of first-aiders and/or special notes to an attending physician may be included here.

A-6 SECTION 5 - FIRE-FIGHTING MEASURES

A-6.1 This section shall state which extinguishing media are suitable and also, if appropriate, which extinguishing media are unsuitable.

A-6.2 Specific hazards arising from the chemical product (example, nature of any hazardous combustion products) should be indicated here.

A-6.3 Specific extinguishing methods and any special protective equipment required should be indicated under precautions for fire-fighters.

A-7 SECTION 6 - ACCIDENTAL RELEASE MEASURES

This section shall contain information on:

i) Personal precautions, protective equipment, and emergency procedures;

ii) Environmental precautions;

iii) Ventilation

iv) Methods and materials for containment and methods and materials for cleaning up (recovery, neutralization and disposal, if different from section 13). Secondary disaster prevention measures may be included.

A-8 SECTION 7 - HANDLING AND STORAGE

A-8.1 Handling

This subsection shall describe precautions for safe handling of a chemical product. They shall include suitable technical measures such as prevention of exposure of the handler to the chemical product and prevention of fire and explosion as well as suitable precautions such as local/general ventilation and prevention of aerosol and dust. They shall also include specific handling precautions for prevention of contact with incompatible substances or mixtures.

A-8.2 Storage

This subsection shall describe conditions for safe storage (suitable storing conditions and unsuitable storing conditions). They shall include suitable technical measures and measures for separation from incompatible substances and mixtures.

A-8.3 Wherever trained personnel for handling and storage of the chemical are required, that should be indicated in this section.

A-9 SECTION 8 - EXPOSURE CONTROLS AND PERSONAL PROTECTION

A-9.1 Permissible concentration such as occupational exposure limit value or Biological Exposure Index (BEI), wherever available, should be given. Also Emergency Response Planning Guideline (ERPG) values, wherever available, should be given.

A-9.2 If appropriate, engineering controls to reduce exposure should be given. The information provided here should complement that provided under section **7** (*see* clause **A-8**).

A-9.3 If possible, the permissible concentration should be dated and its source cited. Information on the recommended test method and its source should also be provided.

A-9.4 The section shall also contain recommendations on appropriate personal protective equipment, such as that for:

i) respiratory protection;

ii) hand protection;

iii) eye protection;

iv) skin and body protection.

A-9.5 The type of protective equipment and specifically designated material (e.g. nitrile rubber gloves) should be indicated.

A-9.6 For a chemical product that only poses a hazard under special conditions, such as large volume, high concentration, high temperature and high pressure, specific precautions for these conditions should be stated.

A-10 SECTION 9 - PHYSICAL AND CHEMICAL PROPERTIES

A-10.1 Where applicable, this section shall provide information on:

i. Appearance of a chemical product, example, physical state, form and colour;

ii. Odour;

iii. *p*H, with indication of the concentration;

iv. Melting point/freezing point;

v. Boiling point, initial boiling point and boiling range;

vi. Flash point;

vii. Upper/lower flammability or explosive limits;

viii. Vapour pressure;
ix. Vapour density;
x. Density/relative density;
xi. Solubility (ies);
xii. n-octanol/water partition coefficient;
xiii. Auto ignition temperature;
xiv. Decomposition temperature.

A-10.2 Where applicable, information should be provided on:

i. Odour threshold;
ii. Evaporation rate;
iii. Flammability; and
iv. Viscosity

A-10.3 Other data relevant to the safe use of the chemical product, such as radioactivity or bulk density, should also be specified. Other units may also be given, but only in addition to the SI units. If appropriate, the method used in the determination of a property should be identified.

A-11 SECTION 10 - STABILITY AND REACTIVITY

A-11.1 This section shall describe the chemical stability and hazardous reactions occurring under specific conditions. This section shall contain information on:

i. Conditions to avoid (example, static discharge, shock or vibration);
ii. Incompatible materials; and
iii. Anticipated hazardous decomposition products.

The original intended use and reasonably anticipated misuse should be considered.

A-12 SECTION 11 - TOXICOLOGICAL INFORMATION

A-12.1 This section shall contain a concise but complete and comprehensible description of the various toxicological (health) effects of the chemical product, which can arise if the user comes into contact with it.

A-12.2 The description should include:

i) Acute toxicity; IDLH/LD50/LC50 values
ii) Skin irritation/corrosion;

NOTE — Skin Corrosion is synonymous with — skin burning.

iii) Eye damage/irritation;
iv) Respiratory or skin sensitization;
v) Reproductive cell mutagenicity;
vi) Carcinogenicity;
vii) Reproductive toxicity;
viii) Specific target organ toxicity – single exposure;
ix) Specific target organ toxicity – repeated exposure; and
x) Inhalation hazard;

NOTE — inhalation hazard is synonymous with — aspiration hazard.

A-12.3 The description may list:

i) toxicokinetics, metabolism and distribution.

(Data on in vitro mutagenicity, such as ames test, under reproductive cell mutagenicity may be given)

A-12.4 If appropriate, distinction shall be made between effects due to single exposure, repeated exposure and continuous exposure. Immediate and delayed effects shall be mentioned separately, if appropriate.

A-12.5 Symptoms related to numerical measures of toxicity (such as acute toxicity estimate), as well as the physical, chemical and toxicological characteristics, should be included in potential adverse effects.

A-12.6 Information should be given according to the different exposure routes (example, inhalation, skin contact, eye contact, ingestion). Additional results of data from scientific experiments, with references to the sources of information, may be given. If a mixture has not been tested for its health effects as a whole, information on each ingredient should be provided.

A-13 SECTION 12 - ECOLOGICAL INFORMATION

A-13.1 This section shall contain information on possible environmental effects, behaviour, and fate, such as information on:

i) Anticipated behaviour of a chemical product in environment/possible environmental impact/ecotoxicity;

ii) Persistence and degradability and consequences;

iii) Bioaccumulative potential; and

iv) Mobility in soil.

A-13.2 Additional results of data from scientific experiments, with reference to the sources of information, may be given. Any ecological limit value may be indicated here.

A-14 SECTION 13 - DISPOSAL CONSIDERATIONS

A-14.1 This section shall contain appropriate information on recommended methods for safe and environmentally preferred disposal.

A-14.2 These methods of disposal apply not only to the chemical product (waste from residues) but also to any contaminated container and contaminated packing.

A-14.3 The attention of the recipient should be drawn to the possible existence of local disposal regulations.

A-15 SECTION 14 - TRANSPORT INFORMATION

A-15.1 This section shall contain information on codes and classifications according to international regulations for transport, differentiated by the mode of transport, such as land, sea and air.

A-15.2 If applicable, information should be provided on:

i) UN number;

ii) UN proper shipping name;

iii) UN Classification [Transport hazard class(es)];

iv) Packing group (if applicable);

v) Marine pollutant (Y/N); and

vi) Special precautions which a user needs to be aware of, or needs to comply with in connection with transport or conveyance either within or outside their premises.

A-15.3 Other regulations may be added.

A-16 SECTION 15 - REGULATORY INFORMATION

A-16.1 This section should provide information including names of laws specifically applied to a chemical product in a region/country where the SDS is applied.

A-16.2 Information on the regulation relevant to the law should be included. The information should include labelling of a chemical product, where applicable. Attention of the recipient should be drawn to the possible existence of local regulations.

A-17 SECTION 16 - OTHER INFORMATION

A-17.1 This section should provide any further information which may be important from a safety point of view but not specifically relevant to previous headings.

A-17.2 For example, necessity of specific training and the recommended use and possible restrictions of the chemical product may be stated. Literature reference may also be listed here.

ANNEX B

(*Clause* 4.3)

SEQUENCE OF SUB-HEADINGS AND ITEMS OF MSDS

Section 1 Chemical Product and Company Identification:

1.1 Chemical Product Identifiers:

1.1.1 Chemical Name:

1.1.1.1 Common Trivial Name:

1.1.1.2 Generic Name:

1.1.2 Chemical Form:

1.1.3 CAS No.:

1.1.4 Formula (where applicable):

1.1.5 Supplier Code (if applicable):

(If the product is a mixture, state that it is mixture and provide common or generic name)

1.2 Relevant identified uses of the chemical product and uses advised against

1.3 Details of the supplier of the safety data sheet

1.3.1 Company:

1.3.2 Address:

1.3.3 Contact No.:

1.3.4 Contact person in emergency:

1.3.5 Fax No.:

1.3.6 Email (optional):

1.4 Emergency Telephone No.:

Section 2 Hazards Identification

2.1 Classification of the chemical product as per *Dangerous Goods (Classification, Packaging and Labelling) Rules*, 2013 (DGCPL Rules):

2.2 Label Elements

2.2.1 GHS Label Elements example, pictograms or hazard:

Symbols (either graphics or name of the symbol)

2.2.2 Signal Word(s):

2.2.3 Hazard Statements(s):

2.2.4 Precautionary Statement(s) :

2.3 Other hazards except those mentioned in DGCPL Rules, 201:

(Any specific hazard, important symptoms & anticipated emergency may be provided)

Section 3 Composition/Information on Ingredients

3.1 Name of Product:

3.1.1 Systematic Chemical Name or Trivial Name:

3.1.2 Common or Generic Name:

3.1.3 IUPAC Name:

3.1.4 CAS No.:

3.1.5 Other Identifiers:

3.1.6 Concentration range(s) including impurities:

and stabilizing additives which contribute to classification of the product

3.2 State of the Product (a substance or a mixture):

Section 4 First-Aid Measures

4.1 Description of first aid measures for different exposure routes

4.1.1 Inhalation

4.1.2 Skin Contact

4.1.3 Eye Contact

4.1.4 Ingestion

4.2 Most important symptoms and anticipated effects both acute and delayed

4.3 Advice for immediate medical attention and special treatment needed for first-aiders/attending physician. (If any specific agent including antidotes is recommended for first-aid the same may be specified).

Section 5 Fire-fighting Measures

5.1 Extinguishing Media (Suitable extinguishing media):

5.2 Special hazards arising from the chemical product:

5.3 Hazardous Combustion Products (Combustible material, explosive material, corrosive material):

5.4 Specific Extinguishing Methods

5.4.1 Advice for Fire-fighters:

5.4.2 Special protective equipment for fire-fighters:

5.4.3 Other Information:

Section 6 Accidental Release Measures

6.1 Personal precautions, protective equipment and emergency procedures:

6.2 Environmental Precautions:

6.3 Methods and materials for containment and cleaning up:

6.4 Ventilation:

6.5 Measures to prevent secondary disaster, if any:

6.6 Reference to other sections:

Section 7 Handling and Storage

7.1 Precautions for Safe Handling:

7.2 Conditions for Safe Storage, including requirement of hazardous area classification and any incompatibilities:

Section 8 Exposure Controls and Personal Protection

8.1 Control Parameters

8.1.1 Permissible Concentrations

(example, occupational exposure limit values such as TLV, PEL, PLE, ERPG/ biological exposure index, etc) :

8.2 Exposure controls

8.2.1 Appropriate Engineering Controls:

8.2.2 Personal Protective Equipment:

8.2.3 Suggestions for protection of eye, skin and body and respiratory system:

8.2.4 Thermal Hazard Protection:

8.2.5 Environmental Exposure Controls:

8.2.6 Other Information:

(Information on recommended test method)

8.3 Specific precautions for special conditions (high volume/high concentration/ high temperature/ high pressure, etc.) of chemical product posing a hazard:

Section 9 Physical and Chemical Properties

9.1 Information on basic physical and chemical properties

9.1.1 Physical State (Solid, Liquid, Gas):

9.1.2 Molecular Mass:

9.1.3 Colour:

9.1.4 Odour:

9.1.5 Odour Threshold:

9.1.6 *p*H :

9.1.7 Melting/Freezing Point:

9.1.8 Initial Boiling Point and Boiling Range:

9.1.9 Flash Point :

9.1.10 Evaporation Rate:

9.1.11 Flammability:

9.1.12 Upper/Lower Flammability Or Explosive Limits

9.1.13 Vapour Pressure:

9.1.14 Vapour Density:

9.1.15 Relative Density:

9.1.16 Bulk Density:

9.1.17 Specific Gravity:

9.1.18 Water Solubility:

9.1.19 Partition Coefficient:

9.1.20 Auto-ignition Temperature:

9.1.21 Decomposition Temperature:

9.1.22 Viscosity:

9.1.23 Radioactivity:

9.1.24 Explosive Properties (Explosion:

9.1.25 Sensitivity to impact/ static electricity):

9.1.26 Oxidizing Properties:

(Method used in determination of property should be indicated)

9.2 Other Information:

(Important properties if any may be mentioned)

Section 10 Stability and Reactivity

10.1 Reactivity:

10.2 Chemical Stability:

10.3 Possibility of Hazardous Reactions:

10.4 Conditions to Avoid:

10.5 Incompatible Materials:

10.6 Hazardous Decomposition Products:

Section 11 Toxicological Information

11.1 Information on Toxicological Effects:

11.1.1 Acute Toxicity:

11.1.2 Skin Corrosion/ Irritation:

11.1.3 Serious Eye Damage/ Eye Irritation:

11.1.4 Respiratory or Skin Sensitization:

11.1.5 IDLH:

11.1.6 LC50 (Inhalation):

11.1.7 LD50 (Dermal/Oral):

11.1.8 Synergistic/Antagonistic:

11.1.9 Mutagenicity:

11.1.10 Carcinogenicity:

11.1.11 Teratogenicity:

11.1.12 Reproductive Toxicity:

11.1.13 Specific target organ toxicity:

(single/repeated exposure)

11.1.14 Aspiration Hazard:

11.1.15 Additional Information:

(If a mixture is not tested for its health effects as a whole, information on each constituent should be provided)

Section 12 Ecological Information

12.1 Toxicity:

12.2 Persistence and Degradability:

12.3 Bio Accumulative Potential:

12.4 Mobility in Soil:

12.5 Other Adverse Effects:

Section 13 Disposal Consideration

13.1 Waste Treatment Method

13.1.1 Chemical Product:

13.1.2 Contaminated Packaging :

13.1.3 Local Regulations (if any) on Disposal:

Section 14 Transport Information

14.1 UN Number:

14.2 HAZCHEM Code, if applicable :

14.3 UN Proper Shipping Name:

14.4 Transport Hazard Class(es)

14.4.1 Hazard Labels:

14.4.2 Symbols:

14.4.3 Special Provisions:

14.4 Packaging Group:

14.5 Environmental Hazards:

14.6 Special Precautions for User:

14.7 Other Information:

Section 15 Regulatory Information

15.1 Safety, Health and Environmental:

regulations/legislation (local/international) specific for the substance or mixture

15.2 Chemical Safety Assessment:

Section 16 Other Information

16.1 Date of Issue:

16.2 Necessity of Specific Training:

16.3 Disclaimer:

ANNEX C

(*Foreword*)

COMMITTEE COMPOSITION

Chemical Hazards Sectional Committee, CHD 07

Organization(s)	*Representative(s)*
In Personal Capacity	SHRI K. S. RAMPRASAD (***Chairman***)
Alkali Manufacturers Association of India, Mumbai	SHRI K. SRINIVASAN
	SHRI H. S. DAS (*Alternate*)
Bhabha Atomic Research Centre, Mumbai	MS GARIMA SINGH
	SHRI NISHITH GOSH (*Alternate*)
Central Leather Research Institute, Chennai	DR M. SURIYANARAYANAN
Centre for Fire, Explosives and Environmental Science, GoI, Min Of Def	SHRI S. P. DOBHAL
	DR AARTI BHATT (*Alternate*)
Central Food Technological Research Institute, Mysore	DR DANDAMUDI USHARANI
	DR PRASANNA VASU (*Alternate*)
Crop Care Federation of India, New Delhi	MR P. N. KARLEKAR
	DR J. C. MAJUMDAR (*Alternate*)
Department of Chemicals and Petrochemicals, Ministry of Chemicals and Fertilizers, GoI	DR VISHAL CHOUDHARY
Department of Space (ISRO), Bengaluru	SHRI MURALEEKRISHNAN R
	MS LAKSHMI V. W. (*Alternate*)
Directorate General Factory Advice Service and Labour Institutes, Mumbai	SHRI H M BHANDARI
	SHRI P G SATPUTE (*Alternate*)
Defence Research and Establishment, (DRDO), Gwalior	DR PRABHAT GARG
	DR VIRENDRA VIKRAM SINGH (*Alternate*)
Hindustan Unilever Limited, Mumbai	SHRI SANJAY HARLAKA
	SHRI RAKESH WADALKAR (*Alternate*)
Gas Industries Association	SHRI SUNIL KHER
	SHRI ANOOP TANDON (*Alternate*)
Indian Chemical Council, Mumbai	DR C. NANDI
	DR RAKESH KUMAR (*Alternate*)

Organization(s)	*Representative(s)*
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